



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/814,979	03/30/2004	Scott Sibbett	INTEL1530 (P18528)	8637
7590 03/20/2007			EXAMINER	
Raj S. Dave Morrison & Foerster LLP Suite 300 1650 Tysons Blvd. McLean, VA 22102			WATTS, ALLISON LEIGH	
			ART UNIT	PAPER NUMBER
			1753	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		03/20/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/814,979

Applicant(s)

SIBBETT, SCOTT

Examiner

Allison L. Watts

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 33 and 36. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 1753

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3, 5-11, and 13-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Sibbett et al.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

As to claims 1-3, 5-11, and 13-17, Sibbett et al. disclose a device and method comprising an electroosmotic pump (paragraphs 0042 and 0056, claim 17); a particle separating channel having first and second ends, the first end communicating with an electroosmotic pump; a first electrode disposed proximate the first end of the separating channel, and a second electrode spaced apart to maintain a first voltage; the first electrode being part of the electroosmotic pump; a reservoir at the second end of the particle separating channel; at least one sidearm channel in communication with the particle separating channel; a second electrode is proximate each sidearm channel to maintain a voltage with the first electrode; the first and second electrodes are adapted to enable a voltage to be applied to a solution disposed in the separating channel, the voltage causing the particles to migrate in the separating channel; a third electrode

Art Unit: 1753

disposed in the sidearm channel spaced apart from the second electrode to maintain a second voltage causing the particles to migrate in the first separating channel; sieving media in the sidearm channel (paragraphs 0022 and 0046); a reservoir in the second end of the particle separating channel and a reservoir in the end of the sidearm channel distal to the particle separating channel (paragraphs 0015 through 0047; Figures 1-3 and 5).

As to claim 18, Sibbett et al. disclose disposing a conductivity detector in the sidearm channel (paragraph 0060; claim 10; Figure 7).

As to claims 19 and 20, Sibbett et al. disclose a system and method comprising a particle separating channel having a first and second end; at least one sidearm channel in communication with the separating channel; a first electrode proximate the first end of the separating channel; a second electrode spaced apart the first electrode to enable a voltage to be applied to the solution disposed in the separating channel, the second electrode disposed proximate the sidearm channel; and an electroosmotic pump (paragraphs 0042 and 0056, claim 17) in communication with the particle separating channel at the first end, and creating convective flow in the particle separating channel to move the solution against the voltage gradient; and a third electrode disposed in the sidearm channel spaced apart the second electrode to maintain a second voltage to enable an electric field to be applied to a solution disposed in the sidearm channel (paragraphs 0015 through 0047; Figures 1-3 and 5).

Art Unit: 1753

As to claim 21, Sibbett et al. disclose a micro-electro-mechanical system and the particle separating channel and sidearm channel are microfluidic channels (paragraph 0016).

As to claims 22 and 23, Sibbett et al. disclose a method comprising applying a voltage drop between electrodes in an electroosmotic pump (paragraphs 0042 and 0056, claim 17) to create convective flow of a solution in a particle separating channel in communication therewith; applying an electric field gradient in the particle separating channel to the solution containing charged particles and causing the charged particles to focus in the separation channel near a sidearm channel (paragraph 0042); and applying an electric field to the focused particles to cause them to migrate through a sieve disposed in a sidearm channel (paragraphs 0022 and 0046), the sidearm channel disposed transverse to the separating channel and in communication therewith (paragraphs 0015 through 0047; Figures 1-3 and 5).

As to claim 24, Sibbett et al. disclose applying a linear electric field gradient (paragraph 0028).

As to claim 25, Sibbett et al. disclose detecting the particles in the sidearm channel (paragraph 0060; claim 10; Figure 7).

3. Claims 1-3, 5-11, and 13-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Chien et al.

As to claims 1-3, 5-11, and 13-17, Chien et al. disclose a device and method comprising an electroosmotic pump (paragraph 0062); a particle separating channel having first and second ends, the first end communicating with an electroosmotic pump;

Art Unit: 1753

a first electrode disposed proximate the first end of the separating channel, and a second electrode spaced apart to maintain a first voltage; the first electrode being part of the electroosmotic pump; a reservoir at the second end of the particle separating channel; at least one sidearm channel in communication with the particle separating channel; a second electrode is proximate each sidearm channel to maintain a voltage with the first electrode; the first and second electrodes are adapted to enable a voltage to be applied to a solution disposed in the separating channel, the voltage causing the particles to migrate in the separating channel; a third electrode disposed in the sidearm channel spaced apart from the second electrode to maintain a second voltage causing the particles to migrate in the first separating channel; sieving media in the sidearm channel (paragraph 0034); a reservoir in the second end of the particle separating channel and a reservoir in the end of the sidearm channel distal to the particle separating channel (paragraphs 0042-0044 and 0060-0064; Figures 4 and 7).

As to claim 18, Chien et al. disclose disposing a conductivity detector in the sidearm channel (paragraphs 0060 and 0066).

As to claims 19 and 20, Chien et al. disclose a system and method comprising a particle separating channel having a first and second end; at least one sidearm channel in communication with the separating channel; a first electrode proximate the first end of the separating channel; a second electrode spaced apart the first electrode to enable a voltage to be applied to the solution disposed in the separating channel, the second electrode disposed proximate the sidearm channel; and an electroosmotic pump (paragraph 0062) in communication with the particle separating channel at the first end,

Art Unit: 1753

and creating convective flow in the particle separating channel to move the solution against the voltage gradient; and a third electrode disposed in the sidearm channel spaced apart the second electrode to maintain a second voltage to enable an electric field to be applied to a solution disposed in the sidearm channel (paragraphs 0042-0044 and 0060-0064; Figures 4 and 7).

As to claim 21, Chien et al. disclose a micro-electro-mechanical system and the particle separating channel and sidearm channel are microfluidic channels (Abstract; paragraph 0043).

As to claims 22 and 23, Chien et al. disclose a method comprising applying a voltage drop between electrodes in an electroosmotic pump (paragraph 0062) to create convective flow of a solution in a particle separating channel in communication therewith; applying an electric field gradient in the particle separating channel to the solution containing charged particles and causing the charged particles to focus in the separation channel near a sidearm channel; and applying an electric field to the focused particles to cause them to migrate through a sieve disposed in a sidearm channel (paragraph 0034), the sidearm channel disposed transverse to the separating channel and in communication therewith (paragraphs 0042-0044 and 0060-0064; Figures 4 and 7).

As to claim 24, Chien et al. disclose applying a linear electric field gradient (paragraphs 0019 and 0031).

As to claim 25, Chien et al. disclose detecting the particles in the sidearm channel (paragraphs 0060 and 0066).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 4 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sibbett et al. in view of Parce.

7. The applied reference has a common inventor with the instant application.

Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed

Art Unit: 1753

in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2).

As to claims 4 and 12, Sibbett et al. disclose using an electroosmotic pump to create convective flow in the particle separation channel (paragraphs 0042 and 0056), but do not specifically disclose an electroosmotic pump containing first and second pump channels, pump reservoirs, and pump electrodes.

Parce disclose an electroosmotic pump containing first and second pump channels, each channel connected to first and second pump reservoirs, each reservoir containing first and second pump electrodes, wherein a voltage drop between the first and second pump electrodes causes electroosmotic flow in the first and second pump channels and convective flow in the particle separation channel (Abstract; column 8, line 17 through column 9, line 9; Figure 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the electroosmotic pump with first and second pump channels of Parce for the electroosmotic pump of Sibbett et al. because it creates pressure-based fluid flow without electroosmotic flow in the separation channel.

Art Unit: 1753

8. Claims 4 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chien et al. in view of Parce.

As to claims 4 and 12, Chien et al. disclose using an electroosmotic pump to create bulk flow in the particle separation channel (paragraph 0062), but do not specifically disclose an electroosmotic pump containing first and second pump channels, pump reservoirs, and pump electrodes.

Parce disclose an electroosmotic pump containing first and second pump channels, each channel connected to first and second pump reservoirs, each reservoir containing first and second pump electrodes, wherein a voltage drop between the first and second pump electrodes causes electroosmotic flow in the first and second pump channels and convective flow in the particle separation channel (Abstract; column 8, line 17 through column 9, line 9; Figure 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the electroosmotic pump with first and second pump channels of Parce for the electroosmotic pump of Chien et al. because it creates pressure-based fluid flow without electroosmotic flow in the separation channel.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: US 6749735 B1, US 20050034990 A1, US 20050006238 A1, US 5858195 A, and US 5750015 A.

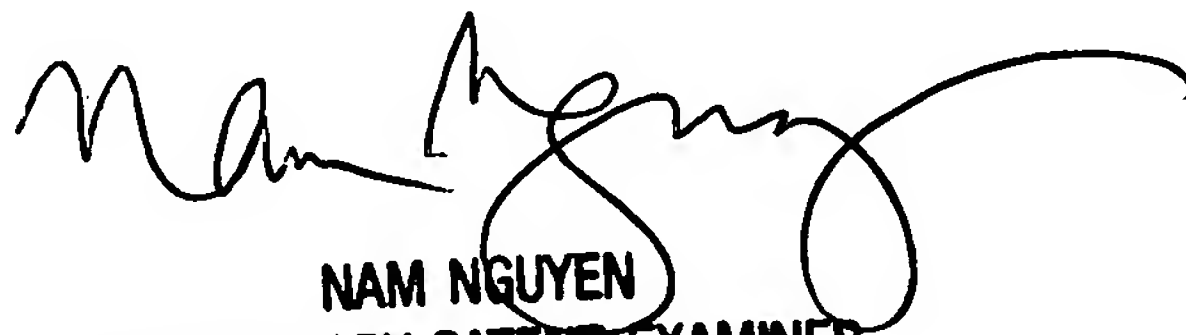
Art Unit: 1753

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allison L. Watts whose telephone number is (571) 272-6640. The examiner can normally be reached on Monday through Friday, 9:00 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ALW
3/12/2007


NAM NGUYEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700